

| L Number | Hits   | Search Text   | DB                   | Time stamp       |
|----------|--------|---|----------------------|------------------|
| 1        | 166622 | polysaccharide starch cellulose fructan<br>inulin   | EPO; JPO;<br>DERWENT | 2003/02/21 07:35 |
| 2        | 245268 | oxidati\$6 oxidiz\$6  | EPO; JPO;<br>DERWENT | 2003/02/21 07:36 |
| 3        | 42761  | aldehyd\$4 monoaldehyde   | EPO; JPO;<br>DERWENT | 2003/02/21 07:36 |
| 4        | 219889 | carboxyl\$6   | EPO; JPO;<br>DERWENT | 2003/02/21 07:36 |
| 5        | 256656 | (aldehyd\$4 monoaldehyde) carboxyl\$6   | EPO; JPO;<br>DERWENT | 2003/02/21 07:37 |
| 6        | 465    | (polysaccharide starch cellulose fructan<br>inulin) and (oxidati\$6 oxidiz\$6) and<br>((aldehyd\$4 monoaldehyde) carboxyl\$6)   | EPO; JPO;<br>DERWENT | 2003/02/21 07:37 |
| 7        | 41     | (polysaccharide starch cellulose fructan<br>inulin) and (oxidati\$6 oxidiz\$6) and<br>(aldehyd\$4 monoaldehyde) and carboxyl\$6 | EPO; JPO;<br>DERWENT | 2003/02/21 07:37 |

| L Number | Hits   | Search Text   | DB                | Time stamp       |
|----------|--------|---|-------------------|------------------|
| 1        | 166622 | polysaccharide starch cellulose fructan inulin  | EPO; JPO; DERWENT | 2003/02/21 07:35 |
| 2        | 245268 | oxidati\$6 oxidiz\$6  | EPO; JPO; DERWENT | 2003/02/21 07:36 |
| 3        | 42761  | aldehyd\$4 monoaldehyde   | EPO; JPO; DERWENT | 2003/02/21 07:36 |
| 4        | 219889 | carboxyl\$6   | EPO; JPO; DERWENT | 2003/02/21 07:36 |
| 5        | 256656 | (aldehyd\$4 monoaldehyde) carboxyl\$6   | EPO; JPO; DERWENT | 2003/02/21 07:37 |
| 6        | 465    | (polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and ((aldehyd\$4 monoaldehyde) carboxyl\$6)   | EPO; JPO; DERWENT | 2003/02/21 07:37 |
| 7        | 41     | (polysaccharide starch cellulose fructan inulin) and (oxidati\$6 oxidiz\$6) and (aldehyd\$4 monoaldehyde) and carboxyl\$6 | EPO; JPO; DERWENT | 2003/02/21 08:02 |
| 8        | 1984   | ((536/56) or (536/105) or (536/124)).CCLS.  | USPAT             | 2003/02/21 08:52 |
| 9        | 400    | fructan   | USPAT; US-PGPUB   | 2003/02/21 08:52 |
| 10       | 2012   | inulin  | USPAT; US-PGPUB   | 2003/02/21 08:52 |
| 11       | 2152   | fructan inulin  | USPAT; US-PGPUB   | 2003/02/21 08:52 |
| 12       | 320290 | oxidati\$6 oxidiz\$6  | USPAT; US-PGPUB   | 2003/02/21 08:52 |
| 13       | 96     | (fructan inulin) same (oxidati\$6 oxidiz\$6)  | USPAT; US-PGPUB   | 2003/02/21 09:23 |
| 14       | 274184 | carboxyl\$6 aldehyd\$4 monoaldehyde   | USPAT; US-PGPUB   | 2003/02/21 09:24 |
| 15       | 96     | ((fructan inulin) (carboxyl\$6 aldehyd\$4 monoaldehyde)) and ((fructan inulin) same (oxidati\$6 oxidiz\$6))               | USPAT; US-PGPUB   | 2003/02/21 09:24 |

FILE 'CAPLUS' ENTERED AT 10:48:54 ON 21 FEB 2003

L1           E KUZEE HENDRIKA/IN,AU  
L1           15 S E5-7  
L2           1172 S FRUCTAN  
L3           9 S L1 AND L2  
L3           E BESEMER ARIE/IN,AU  
L4           46 S E3-10  
L4           E JETTEN JAN/IN,AU  
L5           12 S E4-8  
L5           E VAN DOREN HENDRIK/IN,AU  
L6           30 S E1-8  
L7           2 S L4 AND L5 AND L6  
L8           80 S L4 OR L5 OR L6  
L9           179632 S CARBOHYDRATE  
L10          74518 S POLYSACCHARIDE  
L11          1172 S FRUCTAN  
L12          768351 S OXIDATION  
L13          353060 S OXIDIZ?  
L14          244367 S L9 OR L10 OR L11  
L15          769506 S L11 OR L12  
L16          23 S L8 AND L14 AND L15  
L17          21 S L16 NOT L7

L7 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2000:314401 CAPLUS  
DOCUMENT NUMBER: 132:323226  
TITLE: Carbohydrate oxidation products  
INVENTOR(S): Besemer, Arie Cornelis; Jetten, Jan  
Matthijs; Van Doren, Hendrik Arend; Van Der Lugt, Jan  
Pieter  
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-  
Natuurwetenschappelijk Onderzoek TNO, Neth.  
SOURCE: Eur. Pat. Appl., 7 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE     |
|--|------|----------|-----------------|----------|
| EP 999222  | A1   | 20000510 | EP 1998-203706  | 19981102 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO   |      |          |                 |          |
| WO 2000026257  | A1   | 20000511 | WO 1999-NL673   | 19991102 |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU,<br>CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,<br>IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,<br>MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,<br>SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM,<br>AZ, BY, KG, KZ, MD, RU, TJ, TM |      |          |                 |          |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE,<br>DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF,<br>CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |      |          |                 |          |
| EP 1137672   | A1   | 20011004 | EP 1999-971429  | 19991102 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO   |      |          |                 |          |
| JP 2002528605  | T2   | 20020903 | JP 2000-579643  | 19991102 |
| PRIORITY APPLN. INFO.: EP 1998-203706 A 19981102<br>WO 1999-NL673 W 19991102   |      |          |                 |          |

AB A novel oxidn. product derived from a carbohydrate contg.  
1,2-dihydroxyethylene groups in its repeating units, can be obtained by at  
least partially oxidizing the carbohydrate 1,2-dihydroxyethylene groups to  
dialdehyde groups, and oxidizing a part of the aldehyde groups to CO<sub>2</sub>H  
groups. The oxidn. product has a regular structure with alternating CHO  
groups and CO<sub>2</sub>H groups in a ratio of about 1:1. It can be further  
transformed to an amino-substituted oxidn. product by reductive amination  
of at least a part of the remaining CHO groups. Thus, starch was oxidized  
with NaIO<sub>4</sub> and the resulting starch dialdehyde further oxidized with Br  
(in situ generated from NaBr and AcOOH) to give starch comprising 0.7 CO<sub>2</sub>H  
and 1.2 CHO groups per monomeric unit.

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1999:723070 CAPLUS  
DOCUMENT NUMBER: 131:337312  
TITLE: Process for selective oxidation of primary alcohols  
INVENTOR(S): Van Der Lugt, Jan Pieter; Jetten, Jan Matthijs  
; Besemer, Arie Cornelis; Van Doren,  
Hendrik Arend  
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast  
Natuurwetenschappelijk Onderzoek TNO, Neth.  
SOURCE: PCT Int. Appl., 11 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE     |
|--|------|----------|-----------------|----------|
| WO 9957158   | A1   | 19991111 | WO 1999-NL272   | 19990504 |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,<br>DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,<br>JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK,<br>MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ,<br>TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ,<br>MD, RU, TJ, TM |      |          |                 |          |
| RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK,<br>ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG,<br>CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |      |          |                 |          |

|            |    |          |                |          |
|------------|----|----------|----------------|----------|
| AU 9937369 | A1 | 19991123 | AU 1999-37369  | 19990504 |
| AU 746462  | B2 | 20020502 |                |          |
| BR 9910274 | A  | 20010102 | BR 1999-10274  | 19990504 |
| EP 1093467 | A1 | 20010425 | EP 1999-919713 | 19990504 |
| EP 1093467 | B1 | 20020327 |                |          |

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, NL, SE, PT, IE, FI

|               |    |          |                |          |
|---------------|----|----------|----------------|----------|
| AT 215097     | E  | 20020415 | AT 1999-919713 | 19990504 |
| JP 2002513809 | T2 | 20020514 | JP 2000-547126 | 19990504 |
| ES 2174605    | T3 | 20021101 | ES 1999-919713 | 19990504 |
| US 6518419    | B1 | 20030211 | US 2000-706767 | 20001107 |

PRIORITY APPLN. INFO.:

|                |   |          |
|----------------|---|----------|
| EP 1998-201495 | A | 19980507 |
| WO 1999-NL272  | W | 19990504 |

OTHER SOURCE(S): CASREACT 131:337312

AB Primary alcs., esp. in carbohydrates, can be selectively oxidized to aldehydes and carboxylic acids in a low-halogen process by using a peracid in the presence of a catalytic amt. of a di-tertiary-alkyl nitroxyl (TEMPO) and a catalytic amt. of halide. The halide is preferably bromide and the process can be carried out at nearly neutral to moderately alk. pH (5-11). The peracid can be produced or regenerated by means of hydrogen peroxide or oxygen. The process is advantageous for producing uronic acids and for introducing aldehyde groups which are suitable for crosslinking and derivatization.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2003:76821 CAPLUS  
DOCUMENT NUMBER: 138:124179  
TITLE: Extraction of **polysaccharides** from vegetable  
and microbial material using oxidizing agents  
INVENTOR(S): Van Der Wilden, Wim; Haaksman, Ingrid Karin; Ekhart,  
Peter Frank; **Jetten, Jan Matthijs**  
PATENT ASSIGNEE(S): Nederlandse Organisatie Voor Toegepast-  
Natuurwetenschappelijk Onderzoek Tno, Neth.  
SOURCE: PCT Int. Appl., 15 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.    | KIND   | DATE     | APPLICATION NO. | DATE     |
|---------------|--|----------|-----------------|----------|
| WO 2003008458 | A1   | 20030130 | WO 2002-NL482   | 20020717 |
| W:            | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO |          |                 |          |
| RW:           | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG   |          |                 |          |

PRIORITY APPLN. INFO.: NL 2001-1018568 A 20010717

AB Useful **polysaccharides**, such as .beta.-1,3-glucans, from a biol. raw material can be solubilized and/or isolated by treating the raw material with an oxidizing agent that leads to oxidn. of primary hydroxyl groups in the glucan. The oxidizing agent is preferably a catalytic amt. of a nitroxyl compd. in the presence of a re-oxidizing agent such as hypochlorite or an oxidative enzyme with oxygen or hydrogen peroxide. The **polysaccharide** retains its useful properties during this treatment and is, moreover, more readily available. If desired, protein material from the raw material can also be utilized.

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:811998 CAPLUS  
DOCUMENT NUMBER: 137:312634  
TITLE: Process for oxidizing primary hydroxyls in  
**carbohydrates**  
INVENTOR(S): **Besemer, Arie**; Van Brussel-Verraest, Dorine  
Lisa; Thiewes, Harm Jan  
PATENT ASSIGNEE(S): SCA Hygiene Products Zeist B.V., Neth.  
SOURCE: Eur. Pat. Appl., 6 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO. | KIND   | DATE     | APPLICATION NO. | DATE     |
|------------|--|----------|-----------------|----------|
| EP 1251140 | A1   | 20021023 | EP 2001-201454  | 20010420 |
| R:         | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR |          |                 |          |

PRIORITY APPLN. INFO.: EP 2001-201454 20010420

AB **Carbohydrates** having primary hydroxyl groups, such as starch and cellulose, can be selectively oxidized to carboxylic **carbohydrates** by oxidn. with mol. oxygen, using a nitrogen oxide such as a nitrite salt, as a catalyst. The reaction is advantageously carried out in a dehydrating solvent such as concd. phosphoric acid. Thus, adding 500 .mu.L 65% nitric acid and 50 mg Na nitrite to a dissoln. of 2.5 g potato starch (15.4 mmol anhydroglucose units) in 50 mL of 85% H3PO4, exposing the resulting mixt. to O and oxidizing gave oxidized starch with degree of oxidn. (Blumenkrantz method) 40 and 50% after 24 and 96 h, resp.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 2002:505677 CAPLUS  
DOCUMENT NUMBER: 137:247354  
TITLE: Selective **oxidation of carbohydrates**  
by 4-AcNH-TEMPO/peracid systems

AUTHOR(S): Bragd, Petter L.; Besemer, Arie C.; Van Bakkum, Herman  
 CORPORATE SOURCE: SCA Hygiene Products, Zeist, 3700 AJ, Neth.  
 SOURCE: Carbohydrate Polymers (2002), 49(4), 397-406  
 CODEN: CAPOD8; ISSN: 0144-8617  
 PUBLISHER: Elsevier Science Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Starch, amylopectin, inulin, pullulan and Me .alpha.-D-glucopyranoside (Me .alpha.-GlcP) were oxidized by 4-acetamido-2,2,6,6-tetramethylpiperidine-1-oxyl (4-AcNH-TEMPO) as the mediator and peracetic acid or monoperoxysulfate (Oxone) as the regenerating oxidant. The conversion of primary alc. groups to the corresponding carboxyl groups proceeded with high yield and selectivity, provided that NaBr was added as co-catalyst. The mass mol. distributions of the oxidized **polysaccharides** indicated that no major depolymn. occurred during oxidn. Oxone appeared to be the most efficient oxidant as the reaction rate was 25 times higher than that of peracetic acid in the oxidn. of Me .alpha.-GlcP. However, oxone produces a larger amt. of waste as byproduct than peracetic acid.  
 REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2002:450359 CAPLUS  
 DOCUMENT NUMBER: 137:21693  
 TITLE: Process for oxidizing primary alcohols such as that of **polysaccharides**  
 INVENTOR(S): Bragd, Petter; Besemer, Arie Cornelis  
 PATENT ASSIGNEE(S): Swed.  
 SOURCE: U.S. Pat. Appl. Publ., 3 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.  | KIND | DATE            | APPLICATION NO. | DATE     |
|---|------|-----------------|-----------------|----------|
| US 2002072600   | A1   | 20020613        | US 2001-13654   | 20011213 |
| WO 2002048197   | A1   | 20020620        | WO 2001-NL903   | 20011212 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, VZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |      |                 |                 |          |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  |      |                 |                 |          |
| AU 2002019718   | A5   | 20020624        | AU 2002-19718   | 20011212 |
| PRIORITY APPLN. INFO.:  |      |                 |                 |          |
|   |      | EP 2000-204483  | A               | 20001213 |
|   |      | US 2000-255899P | P               | 20001218 |
|   |      | WO 2001-NL903   | W               | 20011212 |

AB Primary hydroxyl groups in a substrate having both primary and secondary hydroxyl groups can be selectively oxidized to carbaldehyde and/or carboxyl groups by contacting the substrate with a cyclic nitroxyl compd. in the presence of a peroxosulfate as a co-oxidant and by carrying out the reaction at a temp. below 30.degree. and at a pH below 9. The process is halogen-free and metal-free and is esp. suitable for oxidizing **polysaccharides**. Thus, 3.0 g potato starch was gelatinized in 200 mL deionized water at 95.degree. with effective mech. stirring and to which 61 mg 4-acetamido-TEMPO was added and dissolved. The soln. was cooled on ice and the temp. was maintained at .ltoreq.10.degree. throughout the reaction. The reaction was initiated by the addn. of 11.38 g Oxone (i.e., 2 mol HSO5-/mol primary alc.), which was added under mech. stirring in small portions throughout the oxidn. to minimize unwanted side reactions. After each addn. of the acidic oxidant, pH was raised to 8.2 and then kept const. by the addn. of 0.5 M NaOH using a pH stat app. After completion of the reaction (8-10 h), the remaining aldehyde intermediates were reduced to the starting alc. using 150 mg of NaBH4. After one hour, pH was adjusted to .apprx.6.0 with 0.5 M HCl and the reacted **polysaccharides** were pptd. in 2 vol. of ethanol, filtered off, and re-dissolved in 50 mL of water. Finally the materials were freeze-dried. The conversion of the primary hydroxys to carboxys was estd. by 13CNMR to be 60 mol%.

L17 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:781472 CAPLUS  
 DOCUMENT NUMBER: 135:332682

TITLE: Oxidation of polysaccharides with nitroxyls  
 INVENTOR(S): Bragd, Petter; Besemer, Arie Cornelis; Thornton, Jeffrey Wilson  
 PATENT ASSIGNEE(S): Neth.  
 SOURCE: U.S. Pat. Appl. Publ., 3 pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE       |
|---|------|----------|-----------------|------------|
| US 2001034442   | A1   | 20011025 | US 2001-841083  | 20010425   |
| EP 1149846  | A1   | 20011031 | EP 2000-201461  | 20000425   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO |      |          |                 |            |
| JP 2002003503   | A2   | 20020109 | JP 2001-125591  | 20010424   |
| PRIORITY APPLN. INFO.:  |      |          | EP 2000-201461  | A 20000425 |

AB A simplified process for oxidizing starch and other polysaccharides in an aq. soln. or suspension using hypochlorite in the presence of a catalytic amt. of a nitroxyl compd. (e.g., 2,2,6,6-tetramethylpiperidine-1-oxyl) is described. The oxidn. process is bromide-free and is carried out at a pH between 7 and 9.3 and at a temp. between 15 and 25.degree..

L17 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:360047 CAPLUS  
 DOCUMENT NUMBER: 134:354734  
 TITLE: Oxidized polysaccharides and products made thereof  
 INVENTOR(S): Jaschinski, Thomas; Gunnars, Susanna; Besemer, Arie Cornelis; Bragd, Petter  
 PATENT ASSIGNEE(S): SCA Hygiene Products G.m.b.H., Germany  
 SOURCE: PCT Int. Appl., 51 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO.  | DATE       |
|---|------|----------|------------------|------------|
| WO 2001034656   | A1   | 20010517 | WO 2000-EP11048  | 20001108   |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |      |          |                  |            |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  |      |          |                  |            |
| DE 19953589   | A1   | 20010523 | DE 1999-19953589 | 19991108   |
| BR 2000015245   | A    | 20020723 | BR 2000-15245    | 20001108   |
| EP 1228099  | A1   | 20020807 | EP 2000-972899   | 20001108   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, MC, IE, SI, LT, LV, FI, RO, MK, CY, AL   |      |          |                  |            |
| PRIORITY APPLN. INFO.:  |      |          | DE 1999-19953589 | A 19991108 |
|   |      |          | WO 2000-EP11048  | W 20001108 |

AB The present invention relates to a polysaccharide having functional groups, wherein said groups are aldehyde groups formed at positions C2 and/or C3 as well as at position C6 of the anhydroglucose units of the polysaccharide chain. Preferably, the polysaccharide is a cellulosic fibrous material, the primary and secondary hydroxyl groups of which are at least partially oxidized to aldehyde groups by means of TEMPO oxidn. and periodate oxidn. The invention also relates to a paper or nonwoven comprising the above polysaccharide. According to the invention a relative wet strength of greater than 10% can be achieved.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 2001:330920 CAPLUS  
 DOCUMENT NUMBER: 135:122663  
 TITLE: TEMPO-derivatives as catalysts in the oxidation of primary alcohol groups in carbohydrates



AUTHOR(S): Bragd, Petter L.; Besemer, Arie C.; van  
Bekkum, Herman  
CORPORATE SOURCE: SCA Hygiene Products, Zeist, 3704 AJ, Neth.  
SOURCE: Journal of Molecular Catalysis A: Chemical (2001),  
170(1-2), 35-42  
CODEN: JMCCF2; ISSN: 1381-1169  
PUBLISHER: Elsevier Science B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 135:122663  
AB Primary hydroxyl groups in aq. starch, pullulan and Me  
.alpha.-D-glucopyranoside were oxidized to the corresponding carboxylic  
acid functionalities by TEMPO-(4-X)-derivs. using sodium hypochlorite as  
the primary oxidant. All the combinations of substrates and nitroxyl  
radicals resulted in stoichiometric conversions, and the selectivity for  
oxidn. of primary hydroxyls was high. Some depolymn. occurred  
throughout the oxidn., esp. when 4-acetoxy and 4-mesyl-TEMPO  
were used. The pH window of the activity of the inexpensive  
4-acetamido-TEMPO was found to be substantially lower from that of the  
other tested TEMPO-derivs.; thus allowing milder reaction conditions. At  
pH 8, the rate of oxidn. was ca. two times higher when  
4-acetamido-TEMPO was used compared to the other catalysts.  
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:29875 CAPLUS  
DOCUMENT NUMBER: 134:71837  
TITLE: Process for regioselective oxidation of  
primary alcohols of carbohydrates in  
preparation of uronic acids  
INVENTOR(S): Besemer, Arie Cornelis; Jaschinski, Thomas  
PATENT ASSIGNEE(S): SCA Hygiene Products Zeist B.V., Neth.  
SOURCE: PCT Int. Appl., 11 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO.  | DATE     |
|--|------|----------|------------------|----------|
| WO 2001000681  | A1   | 20010104 | WO 2000-NL453    | 20000628 |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR,<br>CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU,<br>ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,<br>LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE,<br>SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA,<br>ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |      |          |                  |          |
| RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,<br>DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ,<br>CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |      |          |                  |          |
| EP 1065218   | A1   | 20010103 | EP 1999-202126   | 19990630 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,<br>IE, SI, LT, LV, FI, RO   |      |          |                  |          |
| DE 10084757  | T    | 20020829 | DE 2000-10084757 | 20000628 |
| PRIORITY APPLN. INFO.: EP 1999-202126 A 19990630<br>WO 2000-NL453 W 20000628   |      |          |                  |          |

OTHER SOURCE(S): CASREACT 134:71837  
AB The invention concerns a process for oxidizing a primary alc. such as a  
carbohydrate using an oxidizing agent in the presence of a  
catalytic amt. of a di-tertiary-alkyl nitroxyl, wherein the alc. is  
oxidized using an oxidic compd. of a period 4 or 5 metal having an  
oxidn. state of a least +3 as an oxidizing agent, for example  
manganese dioxide.  
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2001:12577 CAPLUS  
DOCUMENT NUMBER: 134:87953  
TITLE: Bleach activator based on inulin  
INVENTOR(S): Bolkenbaas, Mariette Ellen Boukje; Raaijmakers,  
Henricus Wilhelmus Carolina; Kuze, Hendrika Cornelia;  
Van Doren, Hendrik Arend; Haaksman, Ingrid  
Karin  
PATENT ASSIGNEE(S): Cooperatie Cosun U.A., Neth.  
SOURCE: PCT Int. Appl., 14 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent

LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO.   | DATE     |
|------------------------|--|----------|-------------------|----------|
| WO 2001000771          | A1   | 20010104 | WO 2000-NL462     | 20000630 |
| W:                     | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                   |          |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |          |                   |          |
| NL 1012482             | C2   | 20010103 | NL 1999-1012482   | 19990630 |
| EP 1190034             | A1   | 20020327 | EP 2000-944471    | 20000630 |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO   |          |                   |          |
| JP 2003503583          | T2   | 20030128 | JP 2001-506766    | 20000630 |
| PRIORITY APPLN. INFO.: |  |          | NL 1999-1012482 A | 19990630 |
|                        |  |          | WO 2000-NL462 W   | 20000630 |

AB A partially acylated fructan, in particular a partially acylated inulin, having a degree of substitution with acyl groups of 0.4-2.5 and a degree of substitution of at most 0.2 with other substituents is used as a bleach activator. The soly. and efficiency of these derivs. is better than that of comparable products such as completely acylated derivs. and carboxylated derivs. The derivs. are prepd. by acylation in an aq. medium under controlled pH.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2000:881088 CAPLUS  
DOCUMENT NUMBER: 134:44078  
TITLE: Process for regenerating periodic acid  
INVENTOR(S): Besemer, Arie Cornelis; Jetten, Jan Mattijs  
PATENT ASSIGNEE(S): Sca Hygiene Products Zeist B.V., Neth.  
SOURCE: PCT Int. Appl., 10 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO.  | DATE     |
|------------------------|--|----------|------------------|----------|
| WO 2000075070          | A1   | 20001214 | WO 2000-NL386    | 20000607 |
| W:                     | AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                  |          |
| RW:                    | GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |          |                  |          |
| BR 2000011371          | A  | 20020226 | BR 2000-11371    | 20000607 |
| EP 1189834             | A1   | 20020327 | EP 2000-939190   | 20000607 |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO   |          |                  |          |
| JP 2003501334          | T2   | 20030114 | JP 2001-501556   | 20000607 |
| PRIORITY APPLN. INFO.: |  |          | EP 1999-201808 A | 19990607 |
|                        |  |          | WO 2000-NL386 W  | 20000607 |

AB Periodic acid is regenerated and recovered from a spent iodate soln. by reaction with at least an equimolar amt. of a hypohalite in the presence of a water-miscible org. solvent, K<sup>+</sup> or divalent cations (esp. Ca<sup>2+</sup>, Mg<sup>2+</sup>). The periodic acid is suitable for oxidn. of carbohydrates to dialdehyde carbohydrates, e.g., starch to dialdehyde starch, a wet strength additive for paper. Dialdehyde starch can be further oxidized to dicarboxy starch, a sequestering agent.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 2000:608928 CAPLUS  
DOCUMENT NUMBER: 133:192110  
TITLE: Process for selective oxidation of primary alcohols and novel carbohydrate aldehydes

INVENTOR(S): Jetten, Jan Matthijs; Van Den Dool, Ronald  
 Tako Marinus; Van Hartingsveldt, Wim; Van Wandelen,  
 Mario Tarcisius Ragmandus  
 PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-  
 Natuurwetenschappelijk Onderzoek TNO, Neth.  
 SOURCE: PCT Int. Appl., 13 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO.  | DATE     |
|------------------------|--|----------|------------------|----------|
| WO 2000050621          | A2   | 20000831 | WO 2000-NL117    | 20000224 |
| W:                     | AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                  |          |
| RW:                    | GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |          |                  |          |
| WO 2000050388          | A1   | 20000831 | WO 2000-NL118    | 20000224 |
| W:                     | AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                  |          |
| RW:                    | GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |          |                  |          |
| BR 2000008474          | A  | 20020122 | BR 2000-8474     | 20000224 |
| BR 2000008478          | A  | 20020122 | BR 2000-8478     | 20000224 |
| EP 1173409             | A1   | 20020123 | EP 2000-906769   | 20000224 |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO   |          |                  |          |
| EP 1177308             | A2   | 20020206 | EP 2000-906768   | 20000224 |
| R:                     | AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO   |          |                  |          |
| JP 2002537374          | T2   | 20021105 | JP 2000-600972   | 20000224 |
| PRIORITY APPLN. INFO.: |  |          | EP 1999-200536 A | 19990224 |
|                        |  |          | WO 2000-NL117 W  | 20000224 |
|                        |  |          | WO 2000-NL118 W  | 20000224 |

AB A process for producing aldehydes, and/or carboxylic acids is described, in which a primary alc., esp. a **carbohydrate**, is oxidized using a catalytic amt. of a nitrosonium compd. obtained by oxidizing a nitroxyl compd. in the presence of an enzyme compd. capable of **oxidn.** Further described are oxidized **carbohydrates** contg. at least 1 cyclic monosaccharide chain group carrying a carbaldehyde group per 25 monosaccharide units and per mol.

L17 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1999:736773 CAPLUS  
 DOCUMENT NUMBER: 131:352732  
 TITLE: Amino-carboxylic acid derivatives of **carbohydrates** as chelating agents  
 INVENTOR(S): Van Brussel-Verraest, Dorine L.; Besemer, Arie C.; Thornton, Jeffrey W.  
 PATENT ASSIGNEE(S): SCA Hygiene Products Nederland B.V., Neth.  
 SOURCE: PCT Int. Appl., 17 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO. | KIND   | DATE     | APPLICATION NO. | DATE     |
|------------|--|----------|-----------------|----------|
| WO 9958574 | A1   | 19991118 | WO 1999-NL300   | 19990517 |
| W:         | AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                 |          |
| RW:        | GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG,  |          |                 |          |

CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
 AU 9941720 A1 19991129 AU 1999-41720 19990517  
 PRIORITY APPLN. INFO.: EP 1998-201586 19980514  
 WO 1999-NL300 19990517

AB The title derivs. are prepd., wherein .gtoreq.1 -CHOH or -CH2OH group per 10 monosaccharide units is converted to a group having the formula -CH2A[NH(CH2)nCHR1CO]mOH, wherein m = 1-10, n = 0-4, A = a direct bond or a (poly)aminoalkylene group, R1 = H, carboxyl, or C1-C4 alkyl optionally substituted by OH, MeO, SH, MeS, substituted mercapto or dithio, amino, guanidino, guanyl, ureido, carboxyl, carbamoyl, Ph, substituted Ph or a heterocyclic group, or, if n .noteq. 0, R1 may also be an amino. Other both carboxylated and aminated **carbohydrates** are equiv. to the derivs. defined above. These derivs. are useful for binding transition metals, e.g. before bleaching of pulp. Thus, a chelating agent was prepd. from oxidized starch, aspartic acid, and Na cyanoborohydride.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1999:375255 CAPLUS  
 DOCUMENT NUMBER: 131:23575  
 TITLE: Superabsorbent material made from oxidized **polysaccharides**  
 INVENTOR(S): Besemer, Arie Cornelis; Thornton, Jeffrey Wilson  
 PATENT ASSIGNEE(S): SCA Molnlycke, Neth.  
 SOURCE: Eur. Pat. Appl., 7 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|---|------|----------|-----------------|----------|
| EP 920874   | A1   | 19990609 | EP 1997-203823  | 19971205 |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO   |      |          |                 |          |
| WO 9929352  | A1   | 19990617 | WO 1998-NL693   | 19981207 |
| W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |      |          |                 |          |
| RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  |      |          |                 |          |
| AU 9915122  | A1   | 19990628 | AU 1999-15122   | 19981207 |
| PRIORITY APPLN. INFO.: EP 1997-203823 19971205<br>WO 1998-NL693 19981207  |      |          |                 |          |

AB The invention provides a process of producing a superabsorbent **polysaccharide** deriv. by oxidn. of a .alpha.-glucan, glucomannan or galactomannan to introduce aldehyde functions; the oxidized **polysaccharide** subsequently being reacted with sulfur dioxide or an equiv. thereof to produce a hydroxysulfonated **polysaccharide**. The **polysaccharide** may be crosslinked before or after the oxidn. The preferred **polysaccharide** is starch or guar. Thus, 10 g starch was suspended in 14% sodium sulfate soln. and was crosslinked with 0.1% epichlorohydrin. After 20 h the product was isolated and washed, then treated with 96% ethanol and acetone and dried in vacuum oven. The dried material was suspended in 250 mL water and 6.6 g sodium periodate was added and the mixt. was stirred for 20 h to obtain an oxidized product with a 50% degree of oxidn. The product was collected by filtration washed, dried, and freeze-dried. To a suspension of 1 g of the dry material in 20 mL of water, 1.6 mL of 39% sodium bisulfite soln. was added to obtain a gel which was pptd. in 96% ethanol and then collected and dried. The product had a free swelling capacity of 1.0 g/g.

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2003 ACS  
 ACCESSION NUMBER: 1999:222866 CAPLUS  
 DOCUMENT NUMBER: 130:224921  
 TITLE: Cleaning of water filters with calcium-binding agents and catalytic oxidation in the presence of a di-tert-nitroxyl compound  
 INVENTOR(S): Besemer, Arie Cornelis; Jetten, Jan Matthijs; Broens, Lute

PATENT ASSIGNEE(S): Norit Membraan Technologie B.V., Neth.  
 SOURCE: PCT Int. Appl., 17 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO. | DATE     |
|------------------------|--|----------|-----------------|----------|
| WO 9915256             | A1   | 19990401 | WO 1998-NL544   | 19980921 |
| W:                     | AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM |          |                 |          |
| RW:                    | GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG   |          |                 |          |
| NL 1007086             | C2   | 19990322 | NL 1997-1007086 | 19970919 |
| AU 9891901             | A1   | 19990412 | AU 1998-91901   | 19980921 |
| PRIORITY APPLN. INFO.: |  |          | NL 1997-1007086 | 19970919 |
|                        |  |          | WO 1998-NL544   | 19980921 |

AB Filters for water purifn. can be cleaned by treatment with a calcium-binding agent, preferably followed by catalytic oxidn., for example with hypochlorite in the presence of 2,2,6,6-tetramethylpiperidine-N-oxyl or a similar nitroxyl. Another oxidn. system is with H2O2 in the presence of a transition metal complex with a cyclic polyamine. The calcium-binding agent can be a dicarboxypolysaccharide, a phosphate, or a polyacylamine (e.g., EDTA or NTA). In particular, dicarboxyinulin, optionally in combination with a zeolite, can be used as calcium-binding agent.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1998:26714 CAPLUS  
 DOCUMENT NUMBER: 128:115171  
 TITLE: Autocatalytic oxidation of primary hydroxyl functions in glucans with nitrogen oxides  
 AUTHOR(S): de Nooy, Arjan E. J.; Pagliaro, Mario; van Bekkum, Herman; Besemer, Arie C.  
 CORPORATE SOURCE: Department of Biochemistry, TNO Nutrition and Food Research Institute, Zeist, 3700 AJ, Neth.  
 SOURCE: Carbohydrate Research (1997), 304(2), 117-123  
 CODEN: CRBRAT; ISSN: 0008-6215  
 PUBLISHER: Elsevier Science Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The selective oxidn. of the primary hydroxyl groups in the glucans cellulose, amylose and pullulan with nitrogen oxides has been studied. The polymers were dissolved in 85% phosphoric acid and sodium nitrate was used as the stoichiometric oxidant. A catalytic amt. of sodium nitrite was added to reduce the induction time. With this reaction system, where the oxidizing nitrogen oxides are formed in situ, the primary hydroxyl groups could be completely oxidized (> 95%) to carboxylic acids. Undesired ketones due to secondary hydroxyl group oxidn. were subsequently reduced with sodium borohydride. Esp. for the .alpha.-glucans, this oxidn.-redn. sequence of secondary hydroxyl functions apparently gave epimerization. Degradn. of the polymers was slow provided the oxidn. was performed at 4 .degree.C. Thus, pullulan with <Mw> .apprxeq. 170 kg/mol yielded a polyuronate with <Mw> .apprxeq. 100 kg/mol. A study of this reaction system with .beta.-cyclodextrin as the substrate clearly showed that the reaction was autocatalytic.

L17 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1997:85181 CAPLUS  
 DOCUMENT NUMBER: 126:91000  
 TITLE: Manufacture of oxidized polymeric carbohydrate ethers as sequestering agents  
 INVENTOR(S): Heeres, Andre; Bleeker, Ido Pieter; Gotlieb, Kornelis Fester; Van Doren, Hendrick Arend  
 PATENT ASSIGNEE(S): Coöperatieve Verkoop- en Productievereniging van Aardappelmeel en derivaten Avebe B. A., Neth.; Heeres, Andre; Bleeker, Ido Pieter; Gotlieb, Kornelis Fester; Van Doren, Hendrick Arend  
 SOURCE: PCT Int. Appl., 51 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent

LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO. | DATE     |
|------------------------|--|----------|-----------------|----------|
| WO 9638484             | A1   | 19961205 | WO 1996-NL218   | 19960603 |
| W:                     | AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG |          |                 |          |
| RW:                    | KE, LS, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA   |          |                 |          |
| NL 1000495             | C2   | 19961203 | NL 1995-1000495 | 19950602 |
| AU 9659125             | A1   | 19961218 | AU 1996-59125   | 19960603 |
| PRIORITY APPLN. INFO.: |  |          | NL 1995-1000495 | 19950602 |
|                        |  |          | WO 1996-NL218   | 19960603 |

AB The title ethers or their mixts. with a d.p. of .gtoreq.10 possess an excellent sequestering and anticrustation activity and are used as biodegradable (no data) additives in cleaning agents. The ethers are manufd. by selective oxidn. of at least a part of the primary OH groups of polymeric carbohydrate ethers with d.p. .gtoreq.10. The oxidn., e.g., of carboxymethyl or hydroxyethyl starch, CMC, etc., is carried out with NaOCl utilizing a catalytic amt. of stable nitroxide radicals, specifically 2,2,6,6,-tetramethylpiperidine-N-oxyl, and optionally, NaBr.

L17 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1995:820596 CAPLUS  
DOCUMENT NUMBER: 123:202726  
TITLE: Method for oxidizing carbohydrates  
INVENTOR(S): Besemer, Arie Cornelis; de Nooy, Arjan Erik Johan  
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek-, Neth.  
SOURCE: PCT Int. Appl., 20 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND   | DATE     | APPLICATION NO. | DATE     |
|------------------------|--|----------|-----------------|----------|
| WO 9507303             | A1   | 19950316 | WO 1994-NL217   | 19940907 |
| W:                     | JP, US   |          |                 |          |
| RW:                    | AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE |          |                 |          |
| NL 9301549             | A  | 19950403 | NL 1993-1549    | 19930907 |
| PRIORITY APPLN. INFO.: |  |          | NL 1993-1549    | 19930907 |
| OTHER SOURCE(S):       | MARPAT 123:202726  |          |                 |          |

AB Carbohydrates having a primary OH group, e.g., starch (I), inulin, and fractions and derivs. thereof, are oxidized by hypohalite in the presence of a catalytic amt. of di-tert-alkyl nitroxyl, esp. 2,2,6,6-tetramethylpiperidin-1-oxyl (II), in an aq. medium at pH 9-13. The catalytic amt. of nitroxyl is preferably 0.1-2.5 wt.% (based on the carbohydrate). The oxidn. affords products having a high content (>90%) of carboxyl groups, without significant chain breakdown. Thus, a 4% soln. of NaOCl was adjusted to pH 10.8 with HCl, cooled to 0.degree., and added all at once to an aq. soln. contg. water-sol. potato I, II (1 wt.% based on I), and NaBr at 0.degree.. The percentage uronic acid formed was a measure of the selectivity of the reaction, and anal. showed a 96% yield.

L17 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2003 ACS  
ACCESSION NUMBER: 1995:468959 CAPLUS  
DOCUMENT NUMBER: 123:33535  
TITLE: Highly selective nitrosyl radical-mediated oxidation of primary alcohol groups in water-soluble glucans  
AUTHOR(S): de Nooy, Arjan E. J.; Besemer, Arie C.; van Bakkum, Herman  
CORPORATE SOURCE: TNO Nutrition and Food Research Institute, Department of Biochemistry, Utrechtseweg 48, AJ Zeist, 3700, Neth.  
SOURCE: Carbohydrate Research (1995), 269(1), 89-98  
CODEN: CRBRAT; ISSN: 0008-6215  
PUBLISHER: Elsevier  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
OTHER SOURCE(S): CASREACT 123:33535

AB With catalytic amts. of 2,2,6,6-tetramethyl-1-piperidinyloxy (TEMPO) and hypochlorite/bromide as the regenerating oxidant in water, primary alc. groups in glucans and derivs. thereof were rapidly and completely oxidized. For pyranosides, selectivity was higher than 95% and no side products could be detected with <sup>1</sup>H and <sup>13</sup>C NMR or with high-performance anion-exchange chromatog. (HPAEC). The optimum pH for the reaction was between 10 and 11. The oxidn. was found to be first order in TEMPO and Br<sup>-</sup>. The oxidn. method can be applied to det. the amt. of primary alc. groups in water-sol. glucans; for pullulan, a proportion of 70% and for dextran, a proportion of 3% primary alc. groups was found.

L17 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1994:220725 CAPLUS  
DOCUMENT NUMBER: 120:220725  
TITLE: The catalytic effect of bromide in the hypochlorite oxidation of linear dextrans and inulin  
AUTHOR(S): Besemer, Arie C.; van Bekkum, Herman  
CORPORATE SOURCE: TNO-Nutr., Zeist, 3700 AJ, Neth.  
SOURCE: Starch/Staerke (1994), 46(3), 101-6  
CODEN: STARDD; ISSN: 0038-9056  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The effect of bromide in the hypochlorite oxidn. of amyloextrins (short chain amylose) and inulin on the reaction rate was investigated. Both in the linear dextrans and inulin oxidn., the rate increased linearly with the NaBr concn., which proved its catalytic effect. The origin of the catalysis is the rapid Br<sup>1-</sup>/OC<sup>11-</sup> conversion. The 2nd-order rate const. of the reaction carbohydrate + HOBr/OBr<sup>1-</sup> .fwdarw. polycarboxylates + HBr/Br<sup>1-</sup> was detd. at pH 9.0 and 294-298 K. The activation energy for the oxidn. of amyloextrins amts. to 67 kJ.mole<sup>-1</sup>. The highest rate was detd. at pH 8.25. The reaction rate was almost independent of pH in the region 8.5-9.5. Because of the simultaneous occurrence of Br, Br<sup>31-</sup>, hypobromous acid, and hypobromite in the pH region investigated, it was difficult to elucidate the oxidn. mechanism.

L17 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1991:473980 CAPLUS  
DOCUMENT NUMBER: 115:73980  
TITLE: Preparation of polydicarboxysaccharides by oxidation of polysaccharides and their use as detergent builders  
INVENTOR(S): Besemer, Arie Cornelis  
PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek (TNO), Neth.  
SOURCE: Eur. Pat. Appl., 11 pp.  
CODEN: EPXXDW  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|---|------|----------|-----------------|----------|
| EP 427349   | A2   | 19910515 | EP 1990-202964  | 19901108 |
| EP 427349   | A3   | 19911113 |                 |          |
| EP 427349   | B1   | 19950712 |                 |          |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE   |      |          |                 |          |
| NL 8902786  | A    | 19910603 | NL 1989-2786    | 19891110 |
| NL 9001027  | A    | 19911118 | NL 1990-1027    | 19900427 |
| ES 2074528  | T3   | 19950916 | ES 1990-202964  | 19901108 |
| CA 2029542  | AA   | 19910511 | CA 1990-2029542 | 19901109 |
| CA 2029542  | C    | 20010424 |                 |          |
| JP 04175301   | A2   | 19920623 | JP 1990-302847  | 19901109 |
| JP 3172171  | B2   | 20010604 |                 |          |
| WO 9117189  | A1   | 19911114 | WO 1991-NL68    | 19910426 |
| W: AT, AU, BB, BG, BR, CA, CH, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MC, MG, MW, NL, NO, PL, RO, SD, SE, SU, US |      |          |                 |          |
| RW: AT, BE, BF, BJ, CF, CG, CH, CM, DE, DK, ES, FR, GA, GB, GR, IT, LU, ML, MR, NL, SE, SN, TD, TG                    |      |          |                 |          |
| AU 9176960  | A1   | 19911127 | AU 1991-76960   | 19910426 |
| AU 649038   | B2   | 19940512 |                 |          |
| EP 526494   | A1   | 19930210 | EP 1991-907826  | 19910426 |
| EP 526494   | B1   | 19981209 |                 |          |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE   |      |          |                 |          |
| JP 05506685   | T2   | 19930930 | JP 1991-507729  | 19910426 |
| JP 3004052  | B2   | 20000131 |                 |          |
| AT 174346   | E    | 19981215 | AT 1991-907826  | 19910426 |
| ES 2126570  | T3   | 19990401 | ES 1991-907826  | 19910426 |

|            |   |          |                 |          |
|------------|---|----------|-----------------|----------|
| CA 2081483 | C | 19990413 | CA 1991-2081483 | 19910426 |
| NO 9204134 | A | 19921027 | NO 1992-4134    | 19921026 |
| US 5326864 | A | 19940705 | US 1992-949498  | 19921207 |

PRIORITY APPLN. INFO.:

|              |   |          |
|--------------|---|----------|
| NL 1989-2786 | A | 19891110 |
| NL 1990-1027 | A | 19900427 |
| WO 1991-NL68 | A | 19910426 |

AB Polydicarboxysaccharides are prepd. by oxidizing polysaccharides in the presence of hypobromite and/or hypiodite in low concn. The method gives high yields of dicarboxy product during short reaction times. The product has high Ca- and Mg-binding capacities and a white color and is useful as a phosphate substitute in detergent compns. Thus, a soln. of 7.1 g amylosedextrin in 150 mL water was treated with 0.3 g NaBr at pH 7.5-9 with 55 mL NaOCl soln. (contg. 0.10 g active Cl/mL; added at 2 mL/5 min) to prep. a dicarboxy amylosedextrin.

L17 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2003 ACS

ACCESSION NUMBER: 1991:452175 CAPLUS  
 DOCUMENT NUMBER: 115:52175  
 TITLE: Polyglucuronic acids and their preparation and use  
 INVENTOR(S): Kerkenaar, Antonius; Besemer, Arie Cornelis  
 PATENT ASSIGNEE(S): Nederlandse Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek (TNO), Neth.  
 SOURCE: PCT Int. Appl., 15 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE     |
|--|------|----------|-----------------|----------|
| WO 9104988   | A1   | 19910418 | WO 1990-NL142   | 19900928 |
| W: JP, US  |      |          |                 |          |
| RW: AT, BE, CH, DE, DK, ES, FR, GB, IT, LU, NL, SE |      |          |                 |          |
| NL 8902428   | A    | 19910416 | NL 1989-2428    | 19890929 |

PRIORITY APPLN. INFO.:

|              |          |
|--------------|----------|
| NL 1989-2428 | 19890929 |
|--------------|----------|

AB Glucose-based polysaccharides such as starch and derivs. are selectively oxidized (esp. in an electrochem. cell) in the presence of complexing substances (e.g., C4-20 alkanolic acids and C3-C19 alkanesulfonic acids) to prep. polyglucuronic acids which have a high content of glucuronic acid units and are useful as complexing agents, carriers, stabilizers, soly. improvers, etc. Thus, 160 mg .beta.-cyclodextrin was oxidized in an electrochem. cell in the presence of 100 mg lauric acid to give a polyglucuronic acid.



|   | Type | Hits   | Search Text  |
|---|------|--------|--|
| 1 | BRS  | 250244 | polysaccharide starch<br>cellulose fructan   |
| 2 | BRS  | 318771 | oxidiz\$4 oxidati\$6   |
| 3 | BRS  | 9274   | (polysaccharide starch<br>cellulose fructan) same<br>(oxidiz\$4 oxidati\$6)  |
| 4 | BRS  | 85970  | monoaldehyde aldehyd\$4  |
| 5 | BRS  | 243622 | monocarboxyl\$4 carboxyl\$4  |
| 6 | BRS  | 1417   | (polysaccharide starch<br>cellulose fructan) and<br>(oxidiz\$4 oxidati\$6) and<br>((polysaccharide starch<br>cellulose fructan) same<br>(oxidiz\$4 oxidati\$6)) and<br>(monoaldehyde aldehyd\$4) and<br>(monocarboxyl\$4 carboxyl\$4)                        |
| 7 | BRS  | 41435  | 536/\$6.ccls.  |
| 8 | BRS  | 200    | ((polysaccharide starch<br>cellulose fructan) and<br>(oxidiz\$4 oxidati\$6) and<br>((polysaccharide starch<br>cellulose fructan) same<br>(oxidiz\$4 oxidati\$6)) and<br>(monoaldehyde aldehyd\$4) and<br>(monocarboxyl\$4 carboxyl\$4))<br>and 536/\$6.ccls. |

|   | <b>DBs</b>      |
|---|-----------------|
| 1 | USPAT; US-PGPUB |
| 2 | USPAT; US-PGPUB |
| 3 | USPAT; US-PGPUB |
| 4 | USPAT; US-PGPUB |
| 5 | USPAT; US-PGPUB |
| 6 | USPAT; US-PGPUB |
| 7 | USPAT; US-PGPUB |
| 8 | USPAT; US-PGPUB |